November-07-12 1:23:13 PM Item ID: 646.3316 Accept ... \*N900040100\* Setup Start **Revision ID:** Item Name: Blade **Start Date: Start Qty: 10.00** \*10\* 07/11/2012 **Cust Item ID: Required Date:** 21/11/2012 Req'd Qty: 10.00 **Customer:** Reference: Run Process Plan: MLJ Date: 17-11-07 Tooling: Approvals: Date: Date: \_\_\_\_\_ SPC (Y/N): Date: Sequence ID/ Operation Set Up/ Tool ID Tool # Plan Accept Reject Reject Insp. Work Center ID **Description Run Hours** Code Qty Qty Number Stamp Draw Nbr Revision Nbr 646.3300 N/C 100 0.00 FX 12/11/12 BAND SAW \*100\* Bandsaw 0.00 Memo Jeaspa Bandsaw Cut Blank at 6.000" 110 0.00 HAAS CNC VERTICAL MACHINING #1 \*110\* onlesselle HAAS 1 0.00 Memo 1-Machine per folio FB147 DWG REV: **N/E** HAAS CNC vertical machine #1

FOLIO REV: AA

<sup>2-</sup> deburr and break all sharp edges except otherwise noted

									DQA:	Date:	
NCR: Yes	/ No				WORK ORDER NON-	CONFOR	MANCE / UP	DATE	QA Closed:	Date:	
Work Order:	•				DISPOSITION	_		AGAINST DE	PARTMENT		
Part No.			-		Rework Scrap Use-as-is	-	Skid-tube  Machining  moforming	Crosstube Small Fab Finishing	4	Water Jet d. Eng. Coor. re/Packaging	Engineering Quality Other
NCR No.					Work Order Update	]	Large Fab	Composite	1	Supplier	
Root				Descri	ption of work order update	Initial	Act	tion	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Chief Eng	Desci	ription	Date	Verification	QC Inspecto
Doc/Data											
Equip/Tooling											
Operator	]										
Material	1	1								1	

pproved							*	
				FAUL	T CATEGORY	7 10 2 11 2		_
Landi	ng (	Gear	 General		_			
		Bending	Bend		Grain	Ovalized	Pressure/Forced	
	_	Centre Not Concentric to O/S	BOM/Route		Hardware	Over/Under tolerance	Temperature/Cure	
L. •	L	Cracks	Broken/Damaged		Inspection Incomplete	Part Incorrect	Weld	
		Crushed/Crimped_	Burrs		Instructions Incomplete/Unclear	Part Lost/Missing	Wrong Stock Pulled	
		Cuffs	Contamination		Maintenance	Part Moved		
		Heat Treat	Countersink		Mislabeled	Positioned Wrong		
		Inspection Strip in Tube	Cut Too Short		Misread	Power Loss/Surge	Other	
		Ripples in Bend	Drill Holes		Offset		-	
		Torque Waves in Extrusion	Drawing		Out of Calibration			
		Turning Sequence	Finish		Out of Sequence			•
		Maye/Twist in Tube	Folio		Outside Dimensions		 	

Setup Other Process Supplier Training

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

November-07-12 1:23:13 PM

\*92775\*

Page 2

Item ID: 646.3316 Accept \*N900040100\* Setup Start **Revision ID:** Item Name: Blade **Start Date:** 07/11/2012 Start Qty: 10.00 \*10\* **Cust Item ID: Required Date:** 21/11/2012 Req'd Qty: 10.00 **Customer:** Reference: Run Approvals: Process Plan: Date:\_\_\_\_\_ **Tooling:** Date: Stop QC: \_\_\_\_\_ Date: \_\_\_\_ SPC (Y/N): Date: Sequence ID/ **Operation** Set Up/ **Tool ID** Reject Tool # Plan Accept Reject Insp. Work Center ID Description **Run Hours** Code Qty Qty Number Stamp 120 QC2- Inspect parts off machine FAI/FAIB 0.00 OAG one 12/11/16 \*120\* OC 0.00 Memo Quality Control 130 12/11/18 QC8- Inspect parts - second check 0.00 \*130\* QC 0.00 Memo Quality Control 140 Outsource process - Heat Treat 0.00 Ca 12/11/20 (10 \*140\* Outsource1 0.00 Memo Outsource process - Heat Treat HEAT TREAT AS PER DWG, SEE NOTE #3 ISSUE P/O: 18452

											DQ	۹:	Date:	
NCR:	Yes	/ No				WORK ORDER NON-O	CO	NFORM	MANCE / UP	DATE				ج
_									-		QA Close	d:	Date:	
Work Ord	er.					DISPOSITION				AGAINST DE	PARTMEN	IT/PROCE	SS	
Part I	No. <sub>.</sub>					Rework Scrap Use-as-is Work Order Update		Therm	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	4	rod. Eng. tore/Pack		Engineering Quality Other
Root					Descrij	ption of work order update	I	Initial	Ac	tion	Sign &			
Cause		Date	Step	Qty	c	or Non-conformance	Ch	ief Eng	Desc	ription	Date	Verif	ication	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved														
						F.	AUL	T CATE	GORY					
Landi		Bending Centre No Cracks Crushed/O Cuffs Heat Trea Inspection	Crimped. t n Strip in		o/s	General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short		Instruct Mainte Mislabe Misread	on Incomplete ions Incomplete/ nance led	Unclear	Ovalized Over/Und Part Incor Part Lost/ Part Move Positioned	Missing ed d Wrong	ce	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled
l		Ripples in	Bend			Drill Holes	1	Offset						

Out of Calibration

Outside Dimensions

Out of Sequence

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

November-07-12 1:23:13 PM

Page 3

Item 1D: 646.3316 Accept \*N900040100\* Setup Start Revision ID: Item Name: Blade **Start Date:** 07/11/2012 **Start Oty: 10.00** \*10\* **Cust Item ID: Required Date:** 21/11/2012 Reg'd Otv: 10.00 **Customer:** Reference: Run Process Plan: Date: Approvals: Tooling: Date: \_\_\_\_ Stop QC: \_\_\_\_ Date: SPC (Y/N): Date: Sequence ID/ Operation Set Up/ Tool ID Tool # Plan Reject Reject Accept Insp. **Work Center ID** Description **Run Hours** Oty Code Otv Number Stamp 150 Receive & Inspect for Damage & Mat'l Certs 0.00 \*150\* Packaging 0.00 Memo Packaging 155 QC5- Inspect part completeness to step on W/O 0.00 \*155\* OC 0.00 Memo Quality Control 160 Spray Painting per OSI005 4.2 0.00 \*160\* SprayPaint 0.00 Memo **Spray Painting** PRIME AS PER DWG, SEE NOTE #4 PRIMER BATCH: 123693

NCR:	Yes	/	No

## **WORK ORDER NON-CONFORMANCE / UPDATE**

DQA:	Date:	
		-

									•		QA Closed:	Date	e:
Work Orde	er:					DISPOSITION				AGAINST DI	EPARTMENT,	/PROCESS	
Part N	٠ ١٥٠					Rework Scrap Use-as-is Work Order Update		Thern	Skid-tube  Machining  noforming  Large Fab	Crosstube Small Fab Finishing Composite	-4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update	li	nitial	Ac	tion	Sign &	1	
Cause		Date	Step	Qty		or Non-conformance	Chi	ief Eng	Desc	cription	Date	Verification	QC Inspector
Doc/Data													
Equip/Tooling													
Operator								,					
Material			•										
Setup	_												
Other	_												
Process	_		[										
Supplier	_												
Training	$\dashv$		1										
Unapproved			<u> </u>					T C 4 T C				1	
Landin			<del></del>			General F	AUL	T CATE	GORY				
Landir		Bending			Γ-	Bend		Grain			Ovalized	Г	
		Centre No	at Concor	atric to 1	\s\-	BOM/Route	-	Hardwa		<b>-</b>	Ovalized Over/Under	+-1	Pressure/Forced
<u> </u>		Cracks	or concer	itile to	),3  -	Broken/Damaged			on Incomplete	-	Part Incorre		Temperature/Cure Weld
ļ <u></u>		Crushed/0	Crimned		-	Burrs	-	-	ions Incomplete/	Unclear	Part Lost/M	<b>)</b>	Wrong Stock Pulled
	$\dashv$	Cuffs	cimpeu.		<u> </u>	Contamination	$\vdash$	Mainte		Officieal	Part Moved	-	VVIOIIR Stock Fulled
	$\overline{}$	Heat Trea	t		<u> </u>	Countersink	$\vdash$	Mislabe			Positioned V		
		Inspection		Tube	·	Cut Too Short	-	Misreac			Power Loss/		Other
<u> </u>	-	Ripples in	•	-		Drill Holes	-	Offset		<u>L.</u> .	_ = = = = = = = = = = = = = = = = = = =		123,00
	$\neg$	Torque W		xtrusio	,	Drawing	$\vdash$		Calibration				
		Turning So	equence			Finish	$\vdash$		Sequence		<del> </del>		
		Wave/Tw	ist in Tub	e		Folio		Outside	Dimensions				

Page 4

November-07-12	? 1:23:13 PM	1		971	7.75			•		rage 4
Revision ID:	646.3316 Blade			Accept	*N900	<u>04010</u>	<b>0*</b> s	Setup Star	rt *NS	S1* S2*
Start Date: Required Date: Reference:	07/11/2012 21/11/2012	Start Qty: 10.00 Req'd Qty: 10.00	*10* *10*		Cust Item I Customer:	D:				
Approvals:		in:	Date:			ate:	F	Run Sta Sto	1 <b>/</b> 1	R1* R2*
Sequence ID/ Work Center II  170 *170* QC Quality Control	)	Operation Description QC14- Inspect Spray Pair Memo	nt	Set Up/ Run Hours 0.00	Tool ID	Tool # Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp  OAS  05 12-12-12
*180 *180* Packaging Packaging		Identify as per dwg & Sto  Memo  ***IDENTIF	,	– 0.00 0.00 PP-120 BY STAMPING P#	4 AND REV***			43	0//9	(10)
*190 *190* QC Quality Control		QC21- Final Inspection -  Memo	Work Order Release	0.00				(3/1 <sub>0</sub>	10 \$	01-09

											•	DQA:	Date	; <del>-</del>
NCR:	Yes	/ No					WORK ORDER NON-C	100	NFORI	MANCE / UPE	DATE	•		•
												QA Closed:	Date	:
Nork Ord	er:						DISPOSITION			•	AGAINST DE	PARTMENT	PROCESS	
Part I							Rework Scrap Use-as-is Work Order Update		Thern	Skid-tube  Machining  noforming  Large Fab	Crosstube Small Fab Finishing Composite	4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root			**		Desc	rir	otion of work order update		nitial	Act	ion	Sign &		
Cause		Date	Step	Qty		•	r Non-conformance	1	ief Eng	Descr		Date	Verification	QC Inspector
oc/Data quip/Tooling perator laterial etup ther rocess upplier raining		ist go-g							,	,		•		
							F.A.	AUL	T CATE	GORY				
Landi	$\overline{}$	I			_	_	General .		1	•		٦		<u>'-</u> ,
		Bending Centre No Cracks	ot Concer	خ مtric to (	<u> </u>		Bend BOM/Route Broken/Damaged		Grain Hardwa			Ovalized Over/Under Part Incorred	<del>-</del>	Pressure/Forced Temperature/Cure
	Н		Crimped		-	-	Burrs	$\vdash$		on Incomplete ions Incomplete/U	Inclose	Part Lost/Mi	<b>⊢</b> -	Wrong Stock Pulled
						_	Contamination	$\vdash$	Mainte	·	, icieai	Part Moved	23111g	VVIOIIg Stock Falled
	$\vdash$	Heat Trea	t		-		Countersink		Mislabe		<del> </del>	Positioned V	Vrong	
		Inspection		Tube	<b> </b>		Cut Too Short		Misread		<u> </u>	Power Loss/		Other
	_	Ripples in	-			-	Drill Holes		Offset	-	<u> </u>	١٠ ٥٠٠ د ١٠٠٠		1
	$\overline{}$	Torque W		xtrusior	, t	$\rightarrow$	Drawing		ł	Calibration				
		Turning Se			ľ		Finish		i	sequence				

Outside Dimensions

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

#### **Picklist Print**

November-07-12 1:23:17 PM

Work Order ID: 92775

646.3316

Parent Item Name: Blade

\*92775\*

\*646 3316\*

**Start Date:** 07/11/2012

**Required Date: 21/11/2012** 

Start Qty: 10.00

Required Qty: 10.00

**Comments:** 

Parent Item:

IPP REV:A NEW ISSUE 12/11/07 JFS VERIFY BY: JLM

C	Component Item ID/ tem Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status	
	1STEEL-A2- 0 500X1 250		Purchased	No			100	f	20.8716	0.5	5.263158				

## \*MSTFFI -A2-R0 500X1 250\* AISI A2 TOOL STEEL BAR, 0.500 X 1.250

Loc Code Location Loc Qty MAT 20.8715789 123250 20.8715789

\*\*

Fix 12/11/12,

												DQA:	Date:	
NCR:	Yes	/ No					WORK ORDER NON-C	COI	NFORI	MANCE / UPDA	ATE	•		
												QA Closed:	Date:	
Work Ord	er:						DISPOSITION				AGAINST DE	PARTMENT/	PROCESS	
							Rework	]		Skid-tube	Crosstube		Water Jet	Engineering
Part 1	Vo.		<del>,</del>				Scrap		l	Machining	Small Fab		d. Eng. Coor.	Quality
NCR I	No.						Use-as-is Work Order Update		Thern	noforming Large Fab (	Finishing Composite	Rec/Stor	e/Packaging Supplier	Other
Root		[	[	1	Des	crir	otion of work order update		nitial	Actio	2	Sign &		
Cause		Date	Step	Qty	Desc		r Non-conformance		nief Eng	Descript		Date	Verification	QC Inspector
oc/Data														
quip/Tooling														
perator														
faterial														
etup	L													
ther														
rocess			<b>;</b>					1						
upplier	_													
raining								İ						
napproved														
							F	AUL	T CATE	GORY				
Landi		1			_		General					•		_
		Bending				_	Bend		Grain			Ovalized	· L	Pressure/Forced
		Centre No	t Concer	ntric to	o/s		BOM/Route	_	Hardwa	re		Over/Under	tolerance	Temperature/Cure
		Cracks				_	Broken/Damaged		Inspect	on Incomplete	<u> </u>	Part Incorred	ct	Weld
	_	Crushed/0	Crimped.				Burrs		Instruct	ions Incomplete/Und	clear	Part Lost/Mi	ssing	Wrong Stock Pulled
	<u> </u>	Cuffs					Contamination	<u></u>	Mainte	nance		Part Moved		
		Heat Trea					Countersink		Mislabe	led		Positioned W	Vrong	<u> </u>
	$ldsymbol{ld}}}}}}}$	Inspection	•	Tube	L		Cut Too Short		Misread	l	<u></u>	Power Loss/	Surge	Other
	<u> </u>	Ripples in			1		Drill Holes		Offset					
	L	Torque W	aves in E	xtrusio	า [		Drawing		Out of (	Calibration				
		Turning Se	equence		1		Finish		Out of	iequence				

Outside Dimensions

Wave/Twist in Tube

DART AEROSPACE LTD	Work Order:	92775
Description: BLADE	Part Number:	646.3316
Inspection Dwg:///, 3300 Rev: U/C		Page 1 of 1

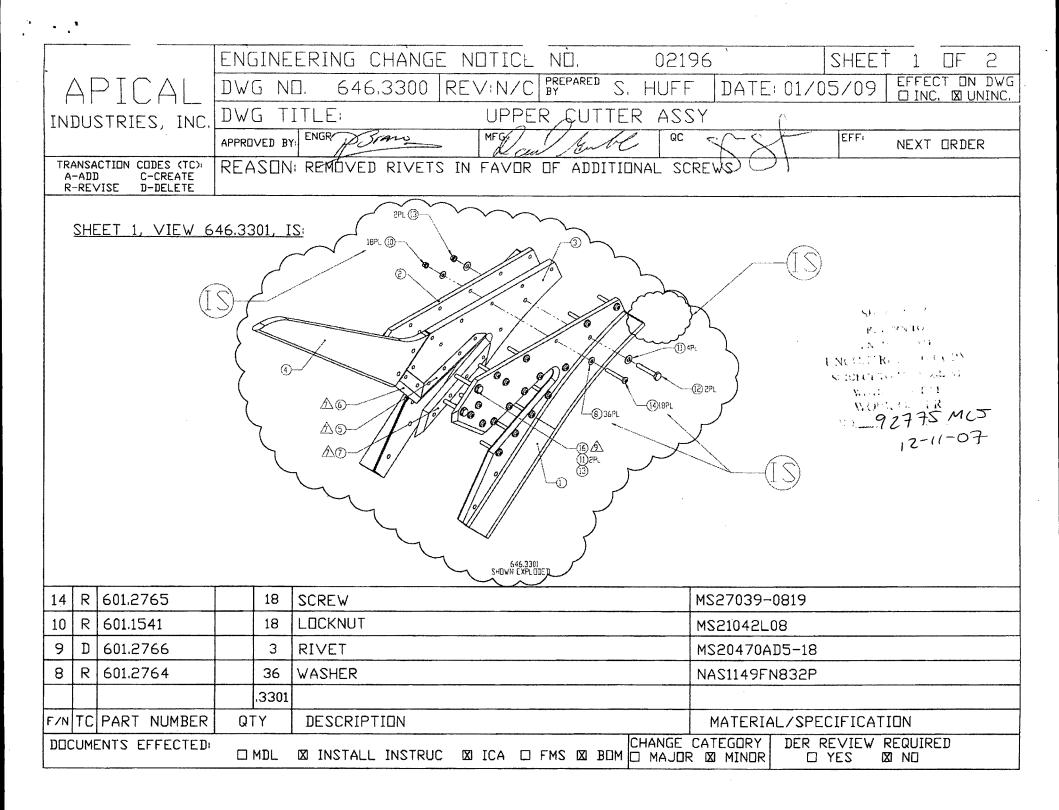
## FIRST ARTICLE INSPECTION CHECKLIST

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
.94	±010	,932			Vein	HL-06
. 524	±005	.524			71	
R.125	= 005	R.125			R-6	
.240	± 002	.2405			Vern	71-06
.524	005	.524			11	
.694	±.002	696			#1	
45.0'	±1/2°	45°			C- Synga	MI-CRR MI-DL
1.250	± 002 + 005 = 001	1.250			Vern	71-06
8,177		Ø. 1775			71	
40.00	± 1/2°	40'			C-Same Vern	ML-CBB
.325 x 3b.0°	± 005 X ± 1/2°	.325X30°			Dern	11-06
.375	±.005	. 375				
					· ·	
					<u> </u>	

Measured by: May 14	Audited by:	13.0 OAS	Preliminary Approval:	
Date: 12/1/16 9-89	Date:	12 11 18 9-89"	Date:	

Rev	Date	Change	Revised by Approved
E	10.04.14	Added preliminary approval	KJ L

\$ 10.04.15



NCR:	Yes	/	No
		,	

												DQA:	Date:	•
NCR:	Yes	/ No					WORK ORDER NON-C	100	VFOR	MANCE / UPI	DATE	·		*
							,					QA Closed:	Date	
Nork Ord	er:	-					DISPOSITION		AGAINST DEPARTMENT/PROCESS					
	Part No						Rework Scrap Use-as-is Work Order Update	Scrap Machining Small Factoring Small Factoring Finishing			Crosstube Small Fab Finishing Composite	Prod. Eng. Coor. Quality  Rec/Store/Packaging Other		
Root	Root De						Legion of work order update		nitial	Act	ion	Sign &		
Cause		Date	Step	Qty			or Non-conformance	ı	ief Eng	Descr	iption	Date	Verification	QC Inspector
oc/Data quip/Tooling perator laterial etup ther rocess upplier														
raining	<u> </u> -													
napproved	1	<u> </u>		L			F		T CATE	GORY				
Land	ng (	Gear	<del> </del>				General		. CAIL	JOINT	······································			
		Bending Centre No	nt Concen	ntric to C	1/5		Bend BOM/Route	F	Grain Hardwa	ro		Ovalized Over/Under	tolerance	Pressure/Forced Temperature/Cure
	┢	Cracks	r concer	itile to c	" }		Broken/Damaged	$\vdash$	ł	on Incomplete		Part Incorred	ļ	Weld
	Cracks Crushed/Crimped.				Ì	_	Burrs	H	1	ions Incomplete/L	Inclear	Part Lost/Mi	<del> </del>	Wrong Stock Pulled
	Cuffs Cuffs				Ì		Contamination	Г	Mainte	•		Part Moved		
	Heat Treat						Countersink	Г	Mislabe		<u> </u>	Positioned V	Vrong	
	Inspection Strip in Tube						Cut Too Short		Misread	i		Power Loss/	· -	Other
		Ripples in	Bend				Drill Holes		Offset		_	<b>-</b>	<u> </u>	•
		Torque W	aves in E	xtrusion	, Ì		Drawing		Out of (	Calibration				
	Turning Sequence						Finish		Out of S	Sequence				

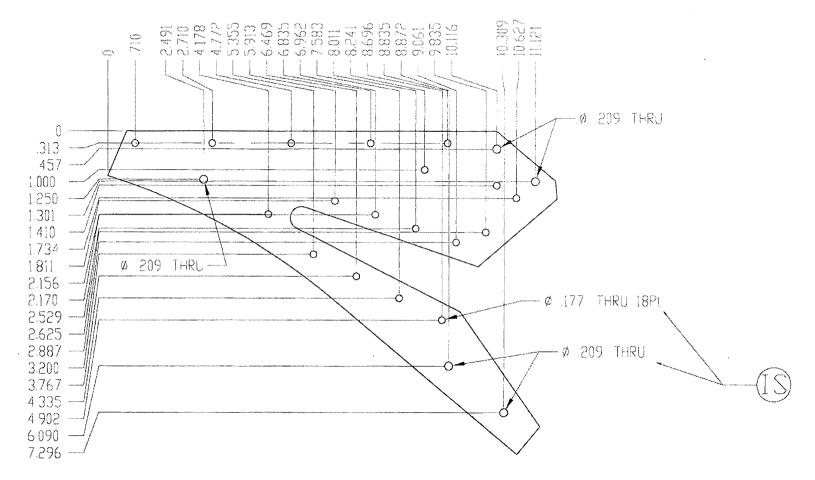
Outside Dimensions

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

#### SHEET 3, SECTION VIEW A-A, IS:

SHEET & OF 2



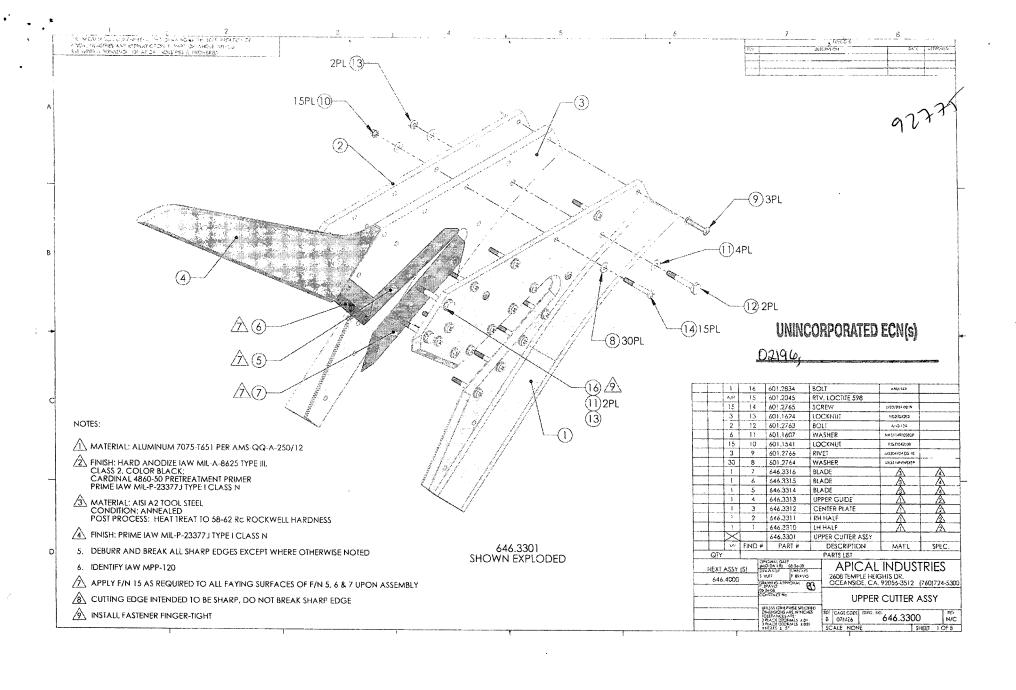
SECTION A-A 36

F/N TC PART NUMBER	QTY	DESCRIPTION	MATERIAL/SPECIFICATION

												DQA:	Date	:
NCR:	Yes	/ No					WORK ORDER NON-C	100	NFOR	MANCE / UPDATE			<del></del>	•
												QA Closed:	Date	:
Nork Ord	er:						DISPOSITION	AGAINST DEPARTMENT/PROCESS						
Part	No.						Rework Scrap			Skid-tube Crosstube  Machining Small Fab		Water Jet Prod. Eng. Coor.		Engineering Quality
NCR	No.						Use-as-is Work Order Update	Thermoforming Finishing Large Fab Composite				Rec/Stor	e/Packaging Supplier	Other
Root					Desc	rip	otion of work order update		nitial	Action		Sign &		
Cause		Date	Step	Qty		C	or Non-conformance	Ch	ief Eng	Description		Date	Verification	QC Inspector
oc/Data	L													
quip/Tooling	_											1		
perator														
laterial														
etup														
ther														
rocess														
upplier	<u></u>													
raining														
napproved	<u> </u>									<u> </u>			L.	
							F	AUL	T CATE	GORY				
Land	ing (	Gear			-		General		i		····	_	_	_
	<u></u>	Bending			Ļ		Bend		Grain		<u> </u>	Ovalized	L	Pressure/Forced
	L	Centre No	t Concer	ntric to (	D/S		BOM/Route	<u></u>	Hardwa	re		Over/Under	tolerance	Temperature/Cure
	Cracks				L		Broken/Damaged		Inspecti	on Incomplete		Part Incorre	ct	Weld
	Crushed/Crimped.				L		Burrs		Instruct	ions Incomplete/Unclear		Part Lost/Mi	ssing	Wrong Stock Pulled
	Cuffs						Contamination		Mainte	nance		Part Moved		
	Heat Treat						Countersink		Mislabe	led		Positioned V	Vrong	
	Inspection Strip in Tube						Cut Too Short		Misread	i		Power Loss/	Surge	Other
		Ripples in	Bend				Drill Holes		Offset					
		Torque W	aves in E	xtrusior	۱ [		Drawing		Out of (	Calibration				
	Turning Sequence						Finish		Out of 9	Sequence				

Outside Dimensions

Wave/Twist in Tube



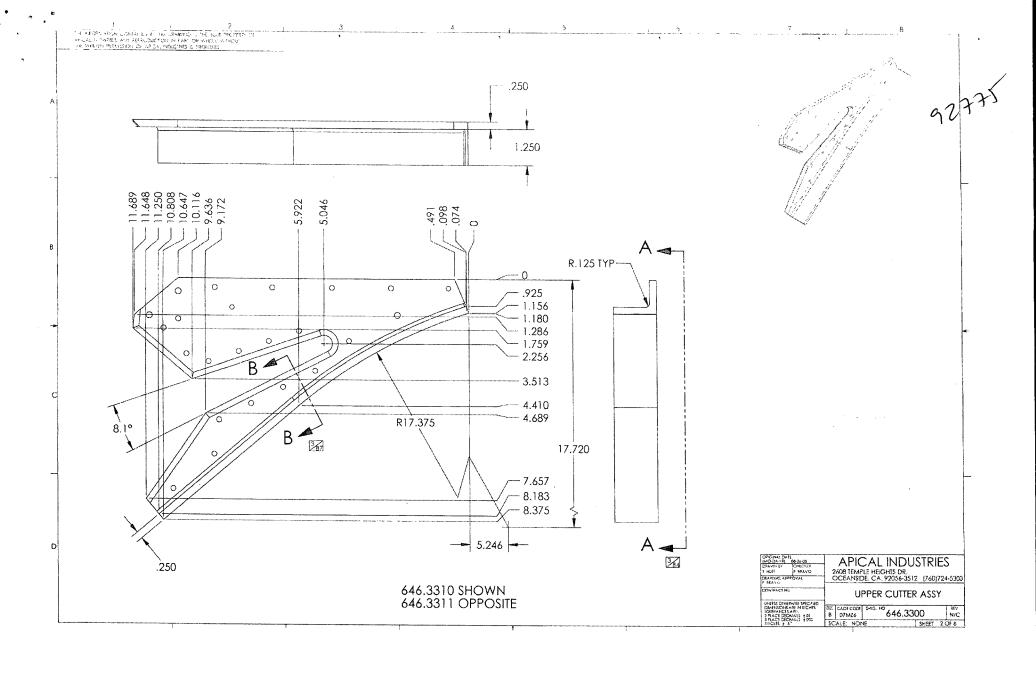
NCR:	Yes	/	No

												DQA:	Date	e: _		
NCR:	Yes	/ No					WORK ORDER NON-	COI	VFOR	MANCE / UP	DATE	OA Clasad	Date	_	•	
											· · · · · · · · · · · · · · · · · · ·	QA Closed:	Date	e:		
Nork Ord	er:						DISPOSITION			AGAINST DEPARTMENT/PROCESS						
		•					Rework			Skid-tube Crosstube			Water Jet	7	Engineering	
Part	No.						Scrap	1	Machining	Small Fab	Pro	d. Eng. Coor.		Quality		
	NODAL						Use-as-is		Thern	noforming	Finishing	Rec/Stor	re/Packaging		Other	
NCR	No.			<del></del>			Work Order Update			Large Fab	Composite		Supplier			
Root					Des	cri	tion of work order update		nitial	Ac	tion	Sign &				
Cause		Date	Step	Qty		C	r Non-conformance	Ch	ief Eng	Desc	ription	Date	Verification		QC Inspector	
oc/Data								Π								
quip/Tooling	L	]												-		
perator			ļ											ı		
laterial	$ldsymbol{ldsymbol{ldsymbol{ldsymbol{ld}}}$		İ													
etup																
ther																
rocess																
upplier														1		
raining									•							
napproved																
							F	AUL	T CATE	GORY						
Land	ing (	Gear					General	_			_	_	_			
		Bending					Bend		Grain			Ovalized		<u>ا</u> ل	Pressure/Forced	
		Centre No	ot Concer	ntric to C	)/S		BOM/Route		Hardwa	re	_	Over/Under	tolerance	╝.	Temperature/Cure	
		Cracks					Broken/Damaged		Inspecti	on Incomplete		Part Incorre	ct		Weld	
		Crushed/Crimped_					Burrs		Instruct	ions Incomplete/	Unclear	Part Lost/Mi	issing	'	Wrong Stock Pulled	
		Cuffs					Contamination		Mainte	enance		Part Moved				
	Heat Treat						Countersink		Mislabe	led		Positioned V	Vrong _			
		Inspection	n Strip in	Tube			Cut Too Short		Misread	d		Power Loss/	Surge		Other	
		Ripples in	Bend				Drill Holes		Offset							
		Torque W	aves in E	xtrusion	. [		Drawing	Out of Calibration								
	Turning Sequence						Finish		Out of	Samuanca						

Outside Dimensions

Wave/Twist in Tube

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G



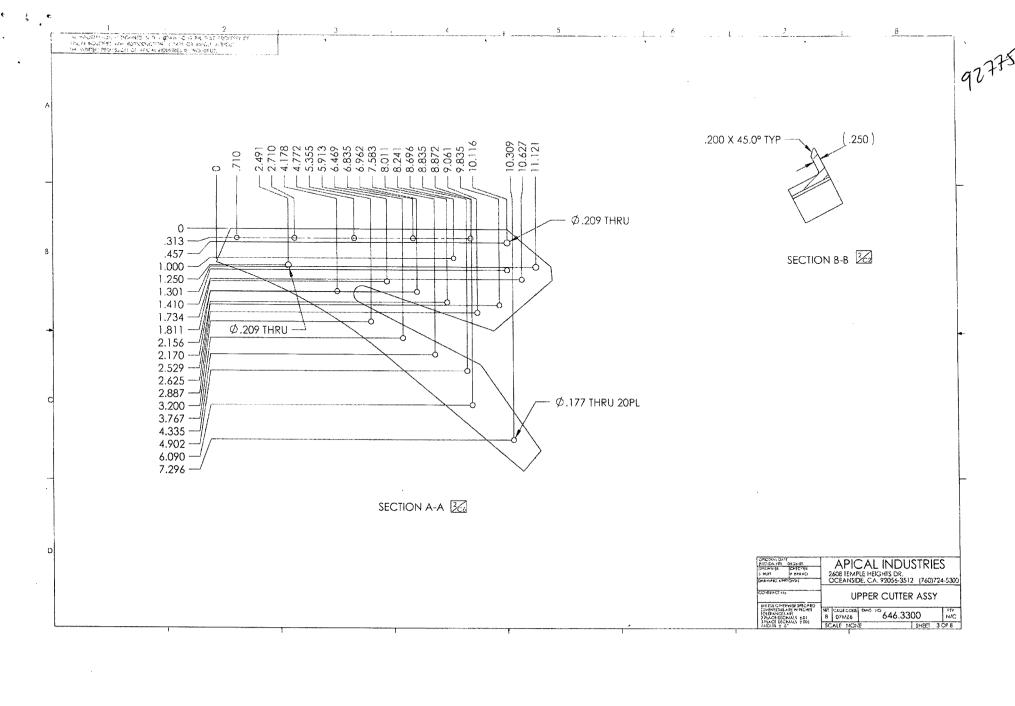
DQA:	Date:	

NCR: Yes / No

## WORK ORDER NON-CONFORMANCE / UPDATE

										QA Closed:	Date		
Work Ord	er:				DISPOSITION		AGAINST DEPARTMENT/PROCESS						
					Rework	Rework			Crosstube	]	Water Jet	Engineering	
Part I	No.				Scrap	1	1	Machining	Small Fab	Pro	d. Eng. Coor.	Quality	
	-				Use-as-is	1	Thern	noforming	Finishing	Rec/Stor	e/Packaging	Other	
NCR I	No				Work Order Update	]		Large Fab	Composite	]	Supplier		
	γ		·			$oldsymbol{\perp}$	1			<del></del>			
Root					ption of work order update	1	nitial		tion	Sign &			
Cause	Date	Step	Qty		or Non-conformance	Chi	ef Eng	Desc	ription	Date	Verification	QC Inspector	
Doc/Data	$\vdash$									•		1	
Equip/Tooling													
Operator													
Material													
Setup													
Other													
Process .													
Supplier													
Training						]							
Unapproved													
					F	AUL	CATE	GORY					
Landi	ng Gear				General								
	Bending				Bend		Grain			Ovalized		Pressure/Forced	
	Centre N	lot Conce	ntric to (	O/S	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure	
	Cracks				Broken/Damaged		Inspecti	on Incomplete		Part Incorre	ct 🗍	Weld	
	Crushed	/Crimped			Burrs		Instruct	ions Incomplete/	'Unclear	Part Lost/Mi	ssing	Wrong Stock Pulled	
	Cuffs				Contamination		Mainte	nance	,	Part Moved	_	_	
	Heat Treat				Countersink	П	Mislabe	led		Positioned V	Vrong		
	Inspection Strip in Tube				Cut Too Short	П	Misread	i		Power Loss/	Surge	Other	
	Ripples i	n Bend			Drill Holes		Offset			-	_	-	
	Torque \	Naves in E	xtrusio	n	Drawing	П	Out of (	Calibration					
	Turning Sequence				Finish	Out of Sequence							
	Wave/Tv	wist in Tul	oe .		Folio		Outside	Dimensions -					

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

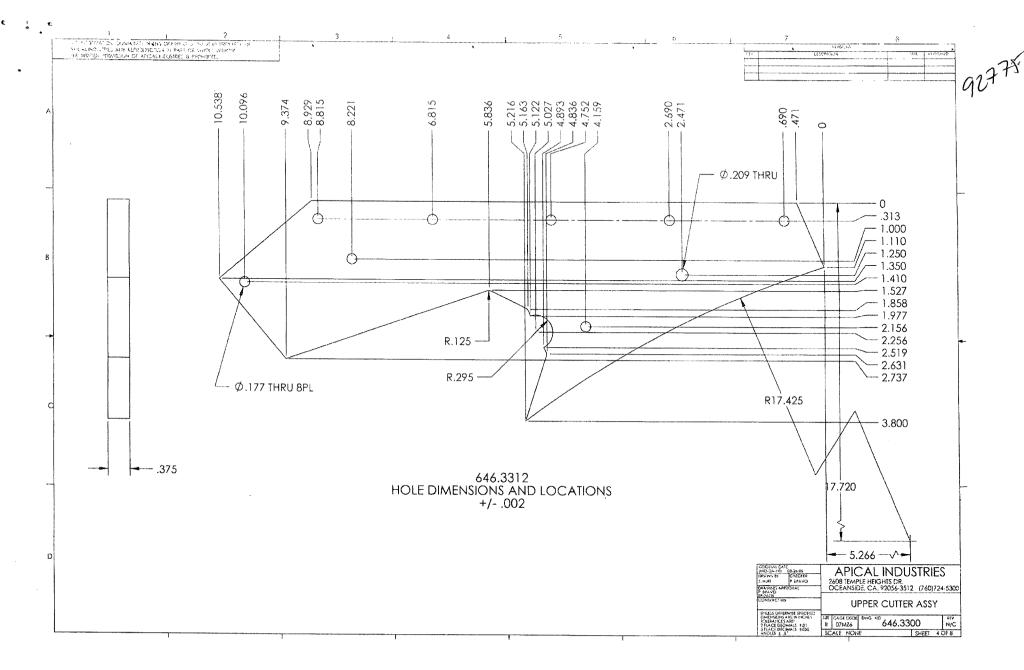


DQA:	Date:	

NCR: Yes / No

## **WORK ORDER NON-CONFORMANCE / UPDATE**

									QA Closed:	Date	2:
Work Order	r:				DISPOSITION			AGAINST DE	PARTMENT	/PROCESS	
Part No	o				Rework Scrap Use-as-is Work Order Update	The	Skid-tube  Machining rmoforming  Large Fab	Crosstube Small Fab Finishing Composite	-	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root				Descr	iption of work order update	Initial	A	ction	Sign &		
Cause	Date	Step	Qty		or Non-conformance	Chief En	g Des	cription	Date	Verification	QC Inspector
Doc/Data  Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved											
Chappioved	<u> </u>	1	1			AULT CAT	L 'EGORY		1	<u>                                     </u>	
Landing	g Gear				General						
	Bending Centre Not Concentric to O/S Cracks Crushed/Crimped. Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend Torque Waves in Extrusion			Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes	Instru Main Misla Misre Offse	vare ction Incomplete ections Incomplete tenance beled ead	e/Unclear	Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned N	ct sissing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other	
<u> </u>				ո  _	Drawing		f Calibration				<del></del>
-	Turning Sequence Wave/Twist in Tube			Finish Folio	<b>—</b>	f Sequence de Dimensions					



											DQ	۸: Da	ate:	
NCR: Y	/es	/ No				<b>WORK ORDER NON-</b>	COI	NFOR	MANCE / UP	DATE				•
											QA Close	d: Da	ate:	
Work Orde	or.					DISPOSITION				AGAINST DE	PARTMEN	T/PROCESS		
l Work Grae						Rework	٦		Skid-tube	Crosstube	1	Water Jet		Engineering
Part N	۱o.					Scrap	1	<u> </u>	Machining	Small Fab	P	rod. Eng. Coor.		Quality
						Use-as-is		Thern	noforming	Finishing	Rec/St	ore/Packaging	<u> </u>	Other
NCR N	١o. ۔					Work Order Update	_	İ	Large Fab	Composite	]	Supplier		
Root					Descri	iption of work order update	T	Initial	Act	tion	Sign &			
Cause	İ	Date	Step	Qty		or Non-conformance	Ch	nief Eng	Desc	ription	Date	Verification	วท	QC Inspector
Doc/Data														
Equip/Tooling	$\Box$													
Operator					,		1							
Material														
Setup														
Other	$\Box$										į			
Process	$\neg$													
Supplier											1			
Training			j											
Unapproved														
						F	AUI	LT CATE	GORY		•	•		•
Landir	ng G	iear				General								<del></del>
		Bending				Bend		Grain			Ovalized			Pressure/Forced
		Centre No	ot Concer	ntric to (	o/s	BOM/Route		Hardwa	re		Over/Und	er tolerance		Temperature/Cure
		Cracks				Broken/Damaged		Inspect	on Incomplete		Part Incor	rect		Weld
} [		Crushed/	Crimped			Burrs		Instruct	ions Incomplete/	Unclear	Part Lost/	Missing		Wrong Stock Pulled

Maintenance

Out of Calibration

Out of Sequence

Outside Dimensions

Mislabeled

Misread

Offset

Part Moved

Positioned Wrong

Power Loss/Surge

Other

Contamination

Countersink

Cut Too Short

Drill Holes

Drawing

Finish

Folio

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

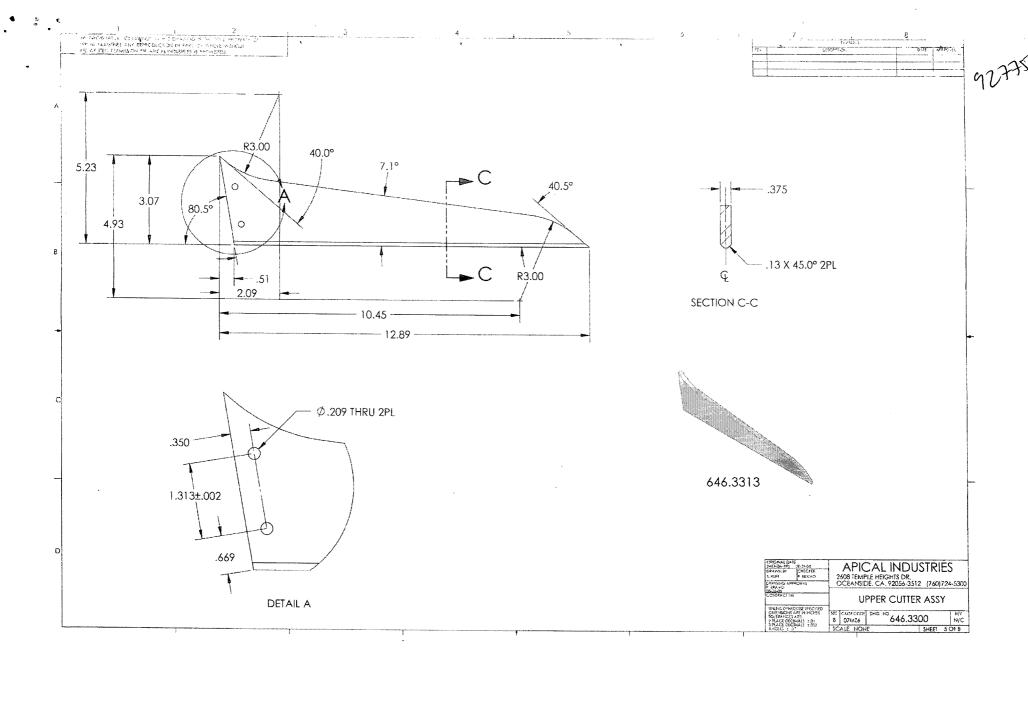
Cuffs

Heat Treat

Inspection Strip in Tube

Torque Waves in Extrusion

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G



											DQA:	Date	2:
NCR:	Yes /	No				WORK ORDER NON-C	100	VFORM	MANCE / UPI	DATE			•
						<b></b>					QA Closed:	Date	<b>:</b>
Work Ord	or <sup>,</sup>					DISPOSITION				AGAINST DE	PARTMENT	PROCESS	
Part I	 No					Rework Scrap Use-as-is Work Order Update		ı	Skid-tube Machining noforming	Crosstube Small Fab Finishing Composite	4	Water Jet d. Eng. Coor. e/Packaging Supplier	Engineering Quality Other
INCK	NO					work Order Opdate	J		Large Fab	Composite[	J	20pplier [	
Root					Descri	ption of work order update	Ţ	Initial	Act	ion	Sign &		
Cause	(	Date	Step	Qty	,	or Non-conformance	Ch	ief Eng	Descr	ription	Date	Verification	QC Inspector
Doc/Data													
Equip/Tooling													
Operator							1						
Material													
Setup													
Other													
Process							•						
Supplier													
Training													
Unapproved							<u> </u>						
						F	AUI	T CATE	GORY				
Landi	ng Gea	r			·	General		-			-	_	
	Ве	nding				Bend		Grain			Ovalized	Į	Pressure/Forced
	Ce	ntre No	t Concer	tric to	o/s	BOM/Route		Hardwa	re	<u></u>	Over/Under	tolerance	Temperature/Cure
	Cra	acks				Broken/Damaged		Inspecti	on Incomplete		Part Incorre	ct [	Weld
	Cru	ushed/0	Crimped.		<u></u>	Burrs		Instruct	ions Incomplete/l	Jnclear	Part Lost/Mi	ssing	Wrong Stock Pulled
	Cu	ffs				Contamination		Mainte	enance	Ĺ	Part Moved		
	He	at Trea	t			Countersink		Mislabe	eled		Positioned V	Vrong	

Misread

Out of Calibration

Out of Sequence

Outside Dimensions

Offset

Other

Power Loss/Surge

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Inspection Strip in Tube

Torque Waves in Extrusion

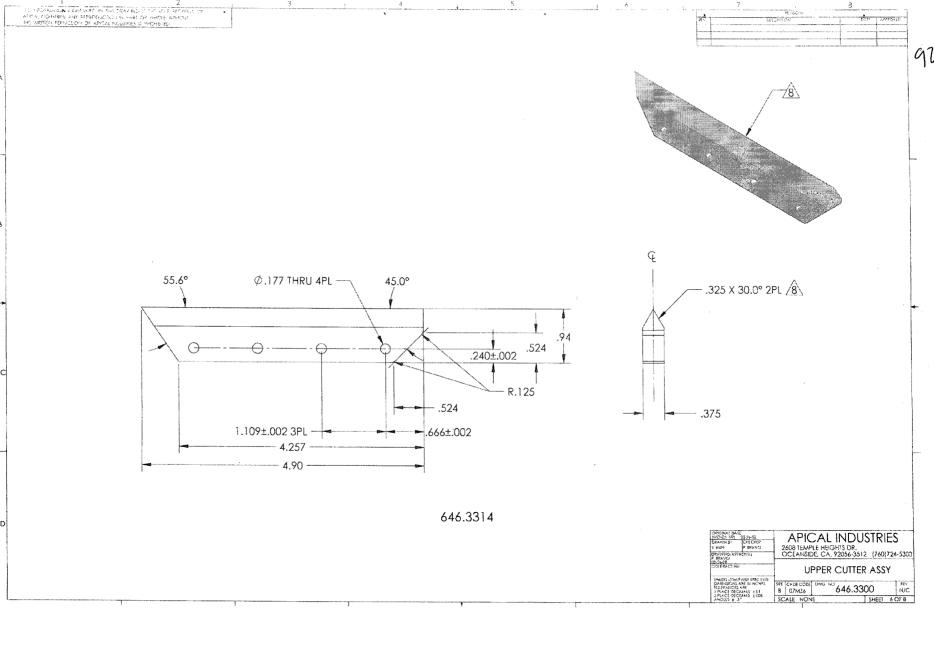
Cut Too Short

Drill Holes

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G



												DQA:	Date	:	
NCR:	Yes	/ No				WORK ORDER NON-O	100	NFORM	MANCE / UP	DATE		•			4
												QA Closed:	Date	:	<u>,</u>
Work Orde	or.					DISPOSITION				AGAINST	DE	PARTMENT	PROCESS		
Work Orde	ei.					Rework	1		Skid-tube	Crosstube		]	Water Jet	٦ Er	ngineering
Part N	Vo.					Scrap	1	f	Machining	Small Fab	_	Pro	d. Eng. Coor.	1	Quality
						Use-as-is	]	Thern	noforming	Finishing		Rec/Stor	e/Packaging	]	Other
NCR I	۷o.					Work Order Update	]		Large Fab	Composite			Supplier		
Root			1		Doscri	ption of work order update		nitial	۸۵	tion		Sign &		<del></del>	
Cause		Date	Step	Qty		or Non-conformance		iief Eng		cription		Date	Verification		QC Inspector
Doc/Data	П	Date	эсср	Qty		or won comornance	-	iici Eng	DC30	inperor:		Dute	Vermeation	1	<del>Qe mspector</del>
Equip/Tooling	$\vdash$														
Operator	Н														
Material	Н			ļ											
Setup			1												
Other															
Process	H														
Supplier			•												
Training							1								
Unapproved				ļ											
						F	AUL	T CATE	GORY						
Landi	ng (	ear				General						_			
		Bending				Bend		Grain				Ovalized		Pre	ssure/Forced
		Centre N	ot Concer	ntric to	o/s	BOM/Route		Hardwa	re			Over/Under	tolerance	Ten	mperature/Cure
		Cracks				Broken/Damaged		Inspect	ion Incomplete			Part Incorre	ct	We	ld
		Crushed/	Crimped.			Burrs		Instruct	ions Incomplete	/Unclear		Part Lost/Mi	ssing	Wr	ong Stock Pulled

Maintenance

Out of Calibration

Outside Dimensions

Out of Sequence

Mislabeled

Misread

Offset

Part Moved

Positioned Wrong

Power Loss/Surge

Other

Contamination

Countersink

Cut Too Short

Drill Holes

Drawing Finish

Folio

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

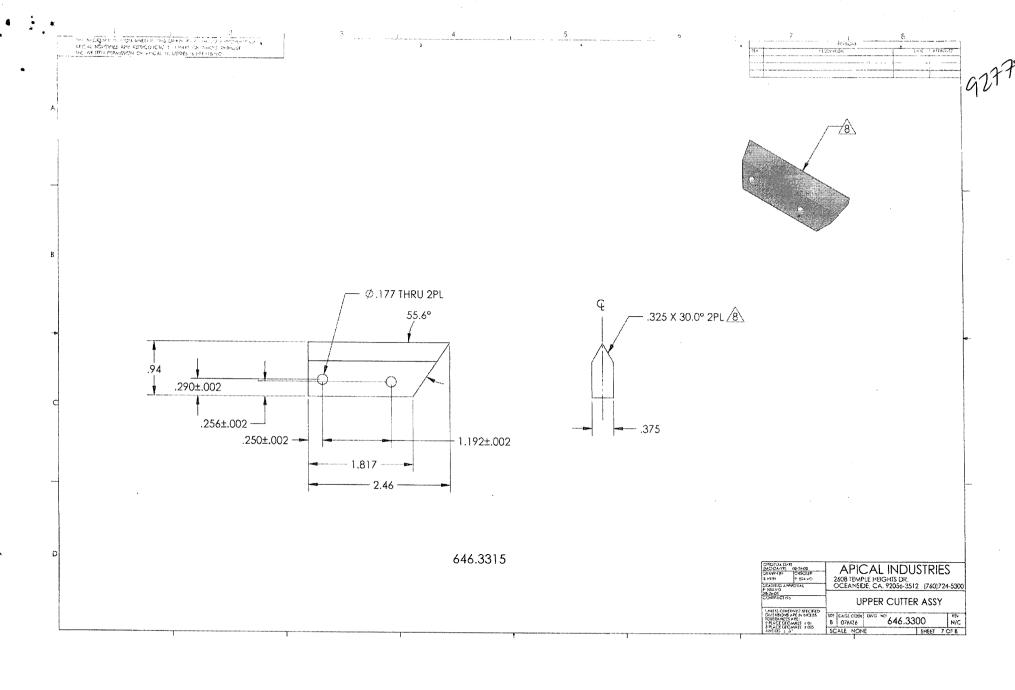
Cuffs

Heat Treat

Inspection Strip in Tube

Torque Waves in Extrusion

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G



											DQA:	Date:	
NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORM	MANCE / UP	PDATE			•
											QA Closed:	Date:	
Work Ord	er:					DISPOSITION		· .		AGAINST DE	PARTMENT	/PROCESS	
Part I	No.					Rework Scrap Use-as-is Work Order Update		Therm	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update		Initial	Ad	ction	Sign &		
Cause		Date	Step	Qty	(	or Non-conformance	Ch	nief Eng	Desc	cription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training			•										
Unapproved													
						F	AUI	T CATE	GORY				
Landi	ng G	Gear				General		_					
		Bending			<u> </u>	Bend		Grain			Ovalized		Pressure/Forced
	Ш	Centre No	ot Concer	ntric to	o/s	BOM/Route	<u></u>	Hardwa			Over/Under	tolerance	Temperature/Cure
		Cracks			<u> </u>	Broken/Damaged	$\perp$	4	on Incomplete		Part Incorre	<del> </del>	Weld
	Щ	Crushed/	Crimped,		_	Burrs	-	1	ions Incomplete,	/Unclear	Part Lost/M	issing	Wrong Stock Pulied
		Cuffs				Contamination	<b>—</b>	Mainte			Part Moved		-
	$\vdash$	Heat Trea			<u> </u>	Countersink	$\vdash$	Mislabe		· <u> </u>	Positioned \		<i>-</i> ¬
		Inspectio	n Strip in	Tube		Cut Too Short		Misread			Power Loss/	'Surge	Other

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

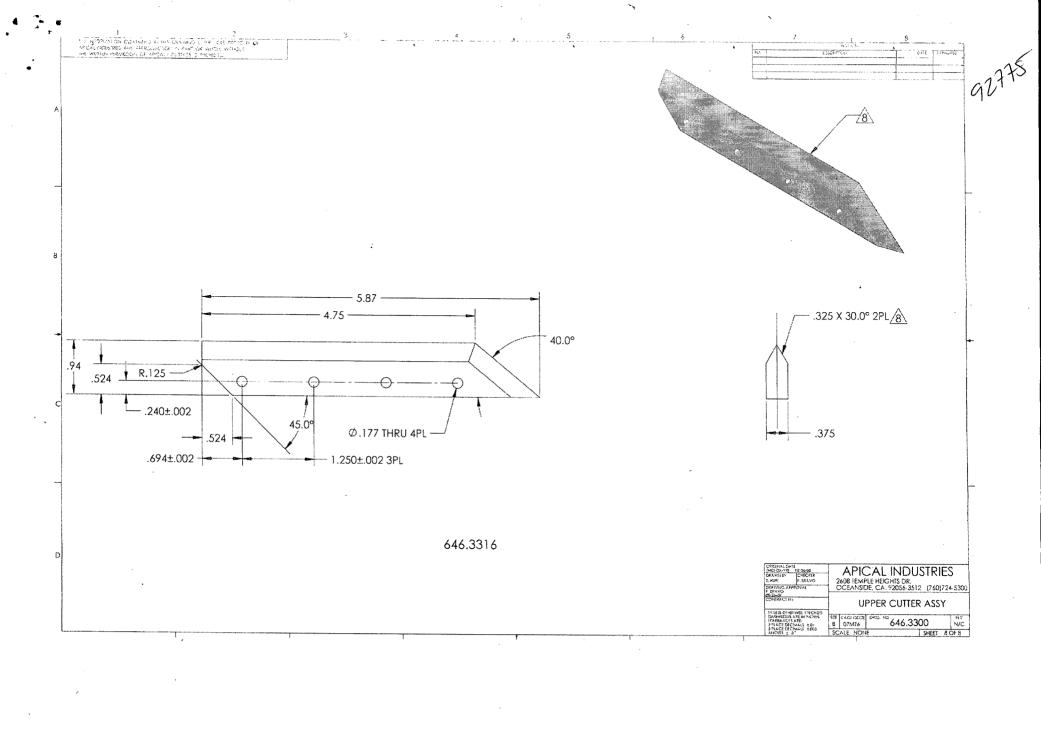
Torque Waves in Extrusion

Drill Holes

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G



												DQA:	Date:	
NCR:	Yes	/ No				WORK ORDER NON-	·CO	NFORM	<b>JANCE / UP</b>	DATE				•
									_			QA Closed:	Date:	
Work Ord	or.					DISPOSITION				AGAI	NST DE	PARTMENT	/PROCESS	
Part I	No.					Rework Scrap Use-as-is Work Order Update		Therm	Skid-tube Machining noforming Large Fab	Crosst Small Finis Compo	Fab		Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descrip	otion of work order update		Initial	Ac	tion		Sign &		
Cause		Date	Step	Qty	o	r Non-conformance	Cł	nief Eng	Desc	ription		Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved														
		-					FAUI	LT CATE	GORY					
Landi		Bending Centre No Cracks Crushed/ Cuffs Heat Trea Inspectio	Crimped. at n Strip in		/s	General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short		Instruct Mainte Mislabe Misread	on Incomplete ions Incomplete/ nance led	'Unclear		Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned N	ct issing Wrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
1	1 1	Ripples in	Bend		1	Drill Holes	- 1	Offset						

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

## **METCOR INC.**

560 BOUL. ARTHUR-SAUVÉ ST-EUSTACHE, QC J7R 5A8 Tel: 450-473-1884 / Fax: 450-491-5498

#### Recu de Livraison

Order	Shipper	Shipping Seq.
181377	1	66593

**Shipped Complete** 

9.

<u>Customer</u> <u>215</u> DART AEROSPACE

1270 ABERDEEN HAWKESBURY, ON K6A 1K7

Ph: 613-632-5200 Fax: 613-632-1053 Shipped To:
DART AEROSPACE
1270 ABERDEEN

HAWKESBURY, ON K6A 1K7

Ph: 613-632-5200 Fax: 613-632-1053

Purchase Ord	ler Number	Customer Shipper No.	Material Type	Order Date	Carrier
PO18	452		A2	2012/11/21	PURO
Quantity	Part No. /	Part Name / Part Description	on		Pounds

30 646.3314 BLADE

(10) RÉFÉRENCE 92773

MATERIAL: AISI A2 TOOL STEEL

(10) 646.3315 BLADE REFERENCE 92774

MATERIAL: AISI A2 TOOL STEEL

(10) 646.3316 BLADE RÉFÉR<del>ENCE</del> 92775

MATERIAL: AISI A2 TOOL STEEL

CONTENANT: 1 BOÎTE DE CARTON

	<u> </u>		
Container Type	# Of Containers	Container Comments	
BOITE DE CARTON	1		· · · · · · · · · · · · · · · · · · ·

#### CERTIFICAT

	Quantity Shipped:	30
PACKING	Pounds Shipped:	9,00
	Quantity Remaining:	0
	Pounds Remaining:	0,00

ERTIFICAT		
	Quantity Shipped:	30
·	Pounds Shipped:	9,00

Signature:

Date:

Shipped ON: 2012/11/26

F-050-06 Rev. B

560, boul. Arthur-Sauvé, St-Eustache (Québec) J7R 5/ Tél. 450 473-1884 Télécopieur/Fax administration 450 491-5498 Télécopieur/Fax production 450 491-6454

Certificat de Conformité
Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
181377	1

CLIENT / customer 215 DART AEROSPACE 1270 ABERDEEN HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to: DART AEROSPACE 1270 ABERDEEN HAWKESBURY

ON K8A 1K7

COMMANDE DU CLIENT customer po	BON DE LIVRAISON DU CLIENT customer shipper no.	MATÉRIEL material	CODE DE TRAITEMENT mat'l heat code	NUMÉRO DE LOT lot number
PO 18452		A2		

#### SPÉCIFICATIONS DU PROCÉDÉ

processing specifications

VAC HARDEN

HARDEN AND TEMPER

EXIGENCE / requirement | SPÉCIFICATIONS / specifiedTESTS EXÉCUTÉS / performed | RÉSULTATS DE TESTS / results |
HARDNESS | 58 - 62 HRC | 5 | 60.0 - 61.0 HRC

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
30	g	646.3314 BLADE (10) RÉFÉRENCE 92773 MATERIAL: AISI A2 TOOL STEEL (10) 646.3315 BLADE REFERENCE 92774
		MATERIAL: AISI A2 TOOL STEEL
		(10) 646.3316 BLADE RÉFÉRENCE 92775 MATERIAL: AISI A2 TOOL STEEL
gen general and the second	and the second s	GONTENANT: 1 BOÎTE DE CARTON

**COMMENTAIRES / comments** 

CERTIFIÉ par / Certified by:

METCOR

DATE: 2012-11-26

I was



Dart Aerospace Ltd. 1270 Aberdeen Street Hawkesbury, ON K6A 1K7

Tel: 613 632 9577 Fax: 613 632 1053

#### PURCHASE ORDER

#### Purchase Order ID PO18452

Purchase Order Date 11/20/12 PO Print Date 11/20/12

Page Number 2 of 2

Order From:

VC-MET004

METCOR INC.

560 BOUL. ARTHUR SAUVE SAINT-EUSTACHE, QC J7R 5A8

CA

**Contact Name** 

**Vendor Phone** 

450 473 1884

Vendor Fax

450 491 5498

**Vendor Account Nbr** 

Buyer

Chantal Lavoie

Requisition Nbr

Tax Resale Nbr Terms

10127-2607 Net 30

Currency

CAD

FOB

Destination-Collect

92775

646.3316 BLADE

12/07/12

10.00 FedEx PI collect

\$10.0000

\$100.00

Yes

Special Inst:

MATERIAL: AISI A2 TOOL STEEL

CONDITION ANNEALED

HEAT TREAT TO 58-62 RC ROCKWELL

**HARDNESS** 

DETAIL C OF C REQUIRED

PO Total:

\$300.00

CERTIFICATE OF CONFORMITY REO'D UPON DELIVERY

No substitution or deviation without consent.

Certificate of Conformity or Material Certification required AES NO

Change Nbr:

**Change Date:** 11/20/12

# METCOR INC. 560 BOUL. ARTHUR-SAUVÉ ST-EUSTACHE, QC, J7R 5A8

Tel: 450-473-1884 / Fax: 450-491-5498

## Certificat de Conformité Désaillé

Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
181377	1

CLIENT / customer 215
DART AEROSPACE
1270 ABERDEEN
HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to: DART AEROSPACE 1270 ABERDEEN HAWKESBURY

ON K6A 1K7

Operation	Temp. spécifiée Specified Temp	Temps de trempe Spécifié Specified Soak Temp	Atmosphere	Carbone Carbon Potential	Q-Media Q-Temp	Four # Furnace #	Date Départ Start Date	Heure d'entrée Time In	Heure de sortie Time Out	Date Complétée Date complete
5.00 VAC HARDE		1 hrs 30 minutes	VAC		AZOTE			d		
6.00 TEMPER	400°F	2 hrs	air			655				
7.00 TEMPER 2	400°F	2 hrs	air			655				
8.00 HARDN INS										
9.00 FINAL INSP							11-26-2012			11-26-2012

#### **COMMENTAIRES / comments**

Le traitement thermique a été fait en utilisant des équipements en conformité avec la spécification demandée.

Toutes les opérations de traitement thermique ont été faites en conformité avec les requis de la spécification demandée et toutes les vérifications et les tests demandées ont été faites et documentés.

Aucun changement ou dérogation n'a été faite par rapport au traitement thermique demandé.

On certifie que le matériel a été fabriqué, échantillonné, testé et inspecté en accord avec les spécifications du matériel et le bon de commande et le matériel rencontre les exigences spécifiés.

All the heat treatment processing performed on this order was accomplished using heat treatment equipment compliant with the requested heat treatment specification.

All the heat treatment operations were accomplished in accordance with the requested/required heat treatment specification and all required verifications test have been performed and documented.

No unauthorized changes or deviations to required heat treatment specifications or procedures have been performed. We certify that the material was manufactured, sampled, tested and inspected in accordance with the material specification and the purchase order and was found to meet the requirements.

APPROUVÉ par / Approved by:	Isabel Oter O	DATE: 2012-11-26
	10	
	$\sqrt{12}$	

/ Nous certifions que toute l'information comprise sur ce rapport est exacte et conforme aux requis du client./We certify that all the information on this report is exact and in accordance with the order requirements.

F-000-20 REV.B